CHARGE NUMBER: Project 1730

PROJECT TITLE: Plant Tissue Culture

PERIOD COVERED: February 1-28, 1983

PROJECT LEADER: L. Weissbecker

DATE OF REPORT: February 28, 1983

I. TOBACCO PLANT PROPAGATION

Havana 38 callus, started from a greenhouse-grown plant, has been made to differentiate and form shoots. These shoots are beginning to form roots with high auxin stimulation. The conditions required to form plantlets from callus tissue are somewhat more rigorous than those used with cotyledons.

Plans: Transfer plantlets to pots in the greenhouse and allow to reach maturity.

II. GROWTH OF TOBACCO CELLS

Undifferentiated cells have continued to grow in suspension culture. The cells have a typical "S" shaped growth curve with a lag phase, log phase and plateau. The lag phase was shortened by repeated subculturing during log phase. Cell wet weight doubling time in log phase was reduced to 47 hours.

III. TOBACCO BY-PRODUCTS

Investigations into secondary products from plant tissue culture have begun. Noel Einolf[1] analyzed several samples for sucrose esters. Undifferentiated callus tissue, grown in the dark, had no detectable sucrose esters. Callus, grown under light, turned green, indicating chlorophyll production, began to form shoots and produced some sucrose esters. Shoots of Havana 38 tobacco initiated from cotyledons and meristem also contained sucrose esters. The samples contained about one-tenth the amount of sucrose esters found in leaves from greenhouse-grown Havana 38.

Plans: Attempts will be made to try to increase sucrose ester production.

In vitro initiated Havana 38 shoots have trichomes on their leaves and stems. Samples of these plantlets were run on TLC plates by Rett Southwick[2] for cis abienol. Although some material migrated on the plate, its Rf did not correspond to cis

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abienol or duvatrienediol. Leaves of greenhouse-grown Havana 38 plants did not contain cis abienol either.

Plans: Roger Bass will get seeds of tobacco plants, reported in the literature, to contain cis abienol. Cells of these plants will be grown and analyzed for cis abienol.

IV. REFERENCE

1. Noell Einolf, Notebook #7853.

2. Rett Southwick, Personal Communication.

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